Amendments To The Claims

The following list of the claims replaces all prior versions and lists of the claims in this application.

1. (Previously presented) A method for transmitting data between a first station and a second station in an optical network, the method comprising:

receiving an input signal representing the data,

demultiplexing the input signal into two or more portions,

preparing the input signal to be less susceptible to errors caused by atmospheric variances during transmission through the atmosphere by performing an inverse fast Fourier transform on the two or more portions to create an orthogonal representation of the input signal, and

modulating at least one laser diode, using the orthogonal representation, such that modulated data can be transmitted on an atmospheric optical carrier between the first station and the second station.

2. (Original) The method of claim 1, further comprising receiving at least one additional input signals representing encoding information.

3. (Original) The method of claim 2, wherein the encoding information is selected from the group consisting of channel quality information, training symbol information, pilot tones, and synchronization information.

4. (Original) The method of claim 2, wherein the performing step further comprises performing the fast Fourier transform using the encoding information and the input signal.

5. (Original) The method of claim 2 further comprising generating forward error correction codes.

6. (Original) The method of claim 5, further comprising adding the forward error correcting codes to the two or more portions.

7. (Original) The method of claim 5, further comprising adding the forward error correcting codes to the orthogonal representation.

8. (Original) The method of claim 5, wherein the performing step further comprises performing the fast Fourier transform using the encoding information, forward error correcting codes, and the input signal.

9. (Original) The method of claim 1 further comprising modulating additional laser diodes such that the modulated data can be transmitted on additional optical carriers using at least one frequency.

10. (Original) The method of claim 1 further comprising modulating additional laser diodes such that the modulated data can be transmitted on additional optical carriers using different frequencies.

11. (Currently Amended) A method for transmitting data between a first station and a second station in an optical network, the method comprising:

receiving an input signal representing the data,

demultiplexing the input signal into two or more portions,

performing an inverse fast Fourier transform on the two or more portions to create an orthogonal representation of the input signal,

modulating at least one laser diode, using the orthogonal representation, such that modulated data can be transmitted on an optical carrier between the first station and the second station, and

distributing the modulated data across two or more optical carriers that are each transmitted by a respective said laser diode and that travel from the first station to the second station along respective different optical paths, wherein each optical carrier receives a predetermined portion of the modulated data.

12. (Currently amended) A method for transmitting data between a first station and a second station in an optical network, the method comprising:

receiving an input signal representing the data,

demultiplexing the input signal into two or more portions,

performing an inverse fast Fourier transform on the two or more portions to create an orthogonal representation of the input signal,

modulating at least one laser diode, using the orthogonal representation, such that modulated data can be transmitted on an optical carrier between the first station and the second station, and

distributing the modulated data across two or more optical carriers that are each transmitted by a respective said laser diode and that travel from the first station to the second station along respective different optical paths, wherein an amount of modulated data to be carried by each carrier is dynamically allocated.

13. (Original) The method of claim 12 further comprising determining the amount of modulated data to be carried on the two or more optical carriers, wherein the determining is made by determining a channel quality of each optical carrier of the two or more optical carriers.

14. (Previously presented) A method for transmitting data between a first station and a second station in an optical network, the method comprising:

receiving an optical input signal containing the data from an atmospheric optical carrier,

filtering the optical input signal to filter extraneous frequencies to create a filtered signal,

detecting errors in the filter signal,

correcting errors in the filtered signal to create a corrected signal,

performing a fast Fourier transform on the corrected signal to create two or more portions, and

multiplexing the two or more portions to extract the data, wherein the multiplexing includes extracting a channel quality estimate that accounts for atmospheric variances affecting the atmospheric optical carrier.

15. (Canceled)

16. (Previously presented) A method for transmitting data between a first station and a second station in an optical network, the method comprising:

receiving an optical input signal containing the data from an atmospheric optical carrier,

filtering the optical input signal to filter extraneous frequencies to create a filtered signal,

performing a fast Fourier transform on the corrected signal to create two or more portions,

detecting errors in the two or more portions caused by atmospheric variances affecting the atmospheric optical carrier,

correcting errors in the two or more portions to create a plurality of corrected signals, and

multiplexing the plurality of corrected signals to extract the data.

17. (Previously presented) The method of claim 16 wherein the multiplexing step further comprises extracting an estimate of the channel quality.

18. (Previously presented) The method of claim 1 further comprising modulating at least one other laser diode to provide spatial diversity in the transmission of the modulated data between the first station and the second station.

19. (Previously presented) A system for transmitting data using line-of-sight optical carriers, the system comprising:

a first station having at least first and second laser diodes, wherein the first station includes:

means for receiving an input signal representing the data,

means for demultiplexing the input signal into two or more portions,

means for preparing the input signal for transmission through the atmosphere, wherein the means for preparing includes means for performing an inverse fast Fourier transform on the two or more portions to create an orthogonal representation of the input signal, and

means for modulating the at least first and second laser diodes, using the orthogonal representation, such that modulated data is transmitted using spatial diversity on the optical carriers between the first station and the second station, and

a second station having at least a receiver, wherein the second station is linked to the first station via at least the optical carriers, and wherein the second station is configured to receive the modulated data transmitted by the first station via the optical carriers.

20. (Previously presented) The system of claim 19 wherein the second station further includes:

means for filtering the received modulated data to filter extraneous frequencies to create a filtered signal,

means for detecting errors in the filter signal caused by atmospheric variances affecting the optical carriers,

means for correcting errors in the filtered signal to create a corrected signal,

means for performing a fast Fourier transform on the corrected signal to create two or more portions, and

means for multiplexing the two or more portions to extract the data, wherein the multiplexing includes extracting a channel quality estimate that accounts for atmospheric variances affecting the optical carriers.

21. (New) The method of claim 11 including selecting respective different frequencies for each of the two or more optical carriers.